MONTHLY WEATHER REVIEW.

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The MONTHLY WEATHER REVIEW is based on data from about 3500 land stations and many ocean reports from vessels taking the international simultaneous observation at Greenwich noon.

Special acknowledgment is made of the data furnished by the kindness of cooperative observers, and by R. F. Stupart, Esq., Director of the Meteorological Service of the Dominion of Canada; Señor Manuel E. Pastrana, Director of the Central Meteorological and Magnetic Observatory of Mexico; Camilo A. Gonzales, Director-General of Mexican Telegraphs; Capt I. S. Kimball, General Superintendent of the United States Life-Saving Service; Commandant Francisco S. Chaves, Director of the Meteorological Service of the Azores, Ponta Delgada, St. Michaels, Azores; W. N. Shaw, Esq., Director Meteorological Office, London; H. H. Cousins, Chemist, in charge of the Jamaica Weather Office; Rev. L. Gangoiti, Director of the Meteorological Observatory of Belen College, Havana, Cuba.

As far as practicable the time of the seventy-fifth meridian is used in the text of the MONTHLY WEATHER REVIEW.

Barometric pressures, both at land stations and on ocean vessels, whether station pressures or sea-level pressures, are reduced, or assumed to be reduced, to standard gravity, as well as corrected for all instrumental peculiarities, so that they express pressure in the standard international system of measures, namely, by the height of an equivalent column of mercury at 32° Fahrenheit, under the standard force, i. e., apparent gravity at sea level and latitude 45°.

FORECASTS AND WARNINGS.

By Prof. E. B. GARRIOTT, in charge of Forecast Division.

IN GENERAL.

From the 5th to 9th barometric pressure was high over the Iceland area and European Russia and low over middle-western and southwestern Europe; this was a period of cold weather in western and southwestern Europe. From the 18th to 23d barometric pressure was low over the Iceland area and northern Europe and high over the central Siberian district; during this period the British, North Sea, and northern European coasts were storm swept. Azores pressure was uniformly high except from the 23d to 26th.

In the United States February was generally a cold month east of the Mississippi River, and from the upper Ohio Valley to the middle Atlantic and New England coasts the deficiency in temperature was more than 6°. West of the Mississippi the temperature averaged above the normal, the greatest excess being shown in the middle districts between the Rocky Mountain and Pacific coast ranges of mountains.

The month opened cold in central and northern districts between the Mississippi River and the Rocky Mountains, and the cold gradually extended thence eastward to the Atlantic and middle and east Gulf coasts. On the 4th a temperature of 50° below zero was reported at Solon Springs, Wis. From the 4th to 9th freezing temperatures occurred in the east Gulf States, on the 8th and 9th in northern counties of Florida, and on the 7th temperatures below zero were noted in Atlantic coast States north of Virginia.

On the 4th and 5th heavy snow fell in the Middle Atlantic and New England States, and on the latter date the snowfall in New England varied from six to thirteen inches. On the 11th a fall of one and one-half inches of snow was reported at Mexico, Mex. On the 23d and 24th a snowstorm extended from the Ohio Valley over the Middle Atlantic and New England States. On the 15th and 16th heavy snow and high winds were reported at Valdez, Alaska.

The severest gale of the month on the Great Lakes occurred on the 1st. On the 5th the middle Atlantic and New England coasts were visited by a heavy windstorm.

BOSTON FORECAST DISTRICT.

The weather of the month was exceptionally cold, the monthly mean temperature for the entire district, 15.9°, being 6.9° below the February normal, and one of the lowest of record for this month. The coldest periods were the 7th, 12th, 13th, 23d, 24th, and 28th. The precipitation was nearly all snow. The snowfall was well distributed over the section; it somewhat exceeded that of the preceding month and was fully up to the average for February. Owing, however, to the low temperatures that generally obtained during the storms the snow was very dry, and the water equivalent, melted precipitation, was below the average, the monthly mean, 2.08 inches, being 1.63 inches below normal. The most severe storm occurred on the 5th, when from six to thirteen inches fell, the larger amounts being on the coast. This storm was accompanied by severe northeast gales that at the most exposed coast stations attained velocities of 70 miles per hour. There was no great loss or damage to shipping and little if any loss of life, and there were fewer destructive storms than usual for February. Warnings were displayed for the storms, but in one or two instances the announcements were somewhat late. There were no marked failures in the forecasts.—*J. W. Smith, District Forecaster.*

NEW ORLEANS FORECAST DISTRICT.

The month, as a whole, was abnormally dry and warm thruout the district. The only severe weather worthy of note prevailed during the 3d, 4th, and 5th, when a cold wave occurred over the northwestern portion of the district and freezing temperatures were recorded southward into the southern portions of Texas and Louisiana. Cold-wave warnings were issued for portions of the district on the 2d and 4th, and freezing temperature warnings were issued for considerable areas on the 2d, 3d, and 5th, well in advance of the severe weather conditions. A general heavy frost, which was covered by warnings, occurred over Louisiana on the 9th. No warnings were issued during the second and third decades and no severe weather conditions occurred during that time. No general storms occurred along the west Gulf coast and no storm warnings were issued.—*I. M. Cline, District Forecaster.*

LOUISVILLE FORECAST DISTRICT.

There were only two pronounced cold periods, 3d–9th and 21st–23d, the temperatures during the rest of the month being about or somewhat above the normal. Rain or snow occurred frequently during the first and last weeks, but during the middle of the month the weather was mostly fair and seasonably pleasant. There were but two snowstorms of consequence, one on the 4th, the other (the heaviest of the winter) on the 23d.

Cold-wave warnings were ordered on the 2d, in advance of

the decided change to colder of the period 3d–6th.—*F. J. Walz, District Forecaster.*

CHICAGO FORECAST DISTRICT.

The weather was milder than usual thruout the district, except in the eastern portion, and the cold waves were few and not, as a rule, severe. The only cold wave that swept the entire district was the one which appeared in the British northwest on the morning of February 1. It pushed southward and eastward, and by the morning of the 3d had practically covered the entire district, zero temperatures and below prevailing almost generally. The cold waves later in the month were moderate, and pushed down from Manitoba over the upper Lake region and the sections lying to the east of this district. Warnings were issued well in advance of these cold waves.

The storm which ushered in the cold wave during the 1st of the month caused gales on Lake Michigan. The storms later in the month were unimportant. Advisory messages were issued in advance to transportation companies that maintain winter service, and no casualties were reported.—*H. J. Cox, Professor and District Forecaster.*

DENVER FORECAST DISTRICT.

The month was remarkable for the uniformly high temperatures that prevailed thruout the district. At many stations the monthly mean was the highest recorded. Precipitation was light on the eastern slope, while over the Plateau region there was a general excess.

The only cold wave of the month occurred in Wyoming and northeastern Colorado on the 2d; it was covered by special warnings issued on the 1st.—*P. McDonough, Local Forecaster.*

SAN FRANCISCO FORECAST DISTRICT.

The beginning of the month was marked by showery weather in the northern portion of the State. A moderate depression off the Oregon coast moved rapidly southeastward thru northern California and Nevada. The presence of a high area off the coast of central California apparently prevented a direct southerly extension of the depression. A period of fair weather followed and on the 7th foehn effects were noticed in southern California, the air coming from the northeast over the mountains and resulting high temperatures being noticed. The pressure distribution for more than ten days was typical of fair, pleasant weather in California. On the 14th, however, local showers occurred at Sacramento and San José, a light thunderstorm occurring at the latter place. These isolated disturbances were not anticipated and are not easily explained without more detailed knowledge of local conditions. On the 16th a widespread but rather flat depression caused moderate rains thruout the State. As a disturbance it seemed to have little energy. On the 21st a well-marked depression, moving slowly, crost California to the valley of the Colorado.

The month as a whole was singularly free from deep and energetic northern coast disturbances. There were few frosts. The month was without storm warnings, a unique experience for the forecaster.—*Alexander G. McAdie, Professor and District Forecaster.*

PORTLAND, OREG., FORECAST DISTRICT.

The opening and closing days of the month were stormy. Between the 6th and the 23d the weather was unusually quiet, being controlled by a series of high pressure areas that caused light winds, mild temperatures, and clear weather to prevail. Timely warnings were issued for all storms, and no noteworthy casualties are known to have occurred on account of stress of weather. The rains attending the storms at the beginning of the month caused a flood in the Willamette River, a full account of which will be found elsewhere in this issue.—*E. A. Beals, District Forecaster.*

RIVERS AND FLOODS.

The flood in the lower Mississippi during January and February, 1907, was purely an Ohio River flood, as the Arkansas, Red, and Yazoo rivers were at moderate stages. The antecedent conditions responsible for its conception and development were described in the MONTHLY WEATHER REVIEW for January, 1907, and need not be repeated.

The river first rose above the flood stage of 45 feet at Cairo, Ill., on January 21, and did not fall below the flood stage of 16 feet at New Orleans, La., until March 6, a period of forty-five days. As a matter of fact the river at New Orleans rose to flood stage on January 14 on account of an earlier tide in the river, making in all fifty-two consecutive days of flood water.

Notwithstanding the fact that the crest stage of 40.3 feet at Memphis exceeded all previous records, the actual flood volume was less than those of 1897, 1903, and 1904. In 1903 at Memphis the river was above the flood stage for fifty-four days, but in 1907 for only twenty-two days, and at New Orleans for eighty-five days in 1903 against fifty-two days in 1907. The increased stage at Memphis in 1907 was due to the fact that there were no crevasses above, while in 1903 there were two in the Arkansas levee. The closure of Bayou Lafourche since 1903 also operated to somewhat increase the lower river stages between the mouth of the bayou and the mouth of the river. More complete mention is made of these points in the detailed report which follows. While there was much alarm at times, with a rush to the defense of the levees, and some extremely critical situations developed, the damage done was comparatively small, owing principally to the early season.

Warnings of the fullest character were issued from five to twenty days in advance, with daily forecasts until the waters subsided, and an inspection of the table following will show the high degree of accuracy attained:

Station.	Stage forecast.	Actual stage.	Difference.
	Feet.	*Feet.*	
Cairo, Ill	50.0 to 50.6	50.4	0.0
New Madrid, Mo	39.0	38.7	+0.3
Memphis, Tenn	40.0, a little over.	40.3	0.0
Helena, Ark	50.0, about.	50.4	−0.4
Arkansas City, Ark	52.0	52.1	−0.1
Greenville, Miss	47.5	47.3	+0.2
Vicksburg, Miss	50.0, close to.	49.7	+0.3
Natchez, Miss	49.5	48.9	+0.6
Baton Rouge, La	37.0 to 38.0	37.3	0.0
New Orleans, La	20.0	19.8	+0.2
Atchafalaya River.			
Simmesport, La	42.0	42.5	−0.5
Melville, La	38.0	37.7	+0.3

In the next table will be found the dates between which the river was above the flood stage at the various river stations, together with the total number of days. A hydrograph showing the stages from day to day will be found in Chart IX.

Above flood stage.

Station.	From—	To—	No. of days.
Cairo, Ill	January 21	February 5	16
New Madrid, Mo	January 20	February 8	20
Luxora, Ark	January 28	February 7	11
Memphis, Tenn	January 22	February 12	22
Helena, Ark	January 13	February 15	34
Arkansas City, Ark	January 10	February 22	44
Greenville, Miss	January 20	February 19	31
Vicksburg, Miss	January 23	February 23	32
Natchez, Miss	February 1	February 25	25
Baton Rouge, La	February 6	February 27	22
Donaldsonville, La	February 5	February 27	23
New Orleans, La	January 14	March 6	52

The following are the reports in detail of the floods in the various districts:

Cairo, Ill., to Memphis, Tenn., by Mr. S. C. Emery, official in charge of local office, U. S. Weather Bureau, Memphis, Tenn.

During the preceding summer months the Mississippi from below Cairo to Helena was considerably above the usual stage for that season. In October and November the river rose to